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## GEORGE MASON UNIVERSITY

### REGULATORY STUDIES PROGRAM

#### **Public Interest Comment on** *Performance Measures for Universal Service Programs*<sup>1</sup>

Docket ID: WC Docket No. 05-195; CC Docket No. 96-45; CC Docket No. 02-6; WC Docket No. 02-60; WC Docket No. 03-109; CC Docket No. 97-21 and/or FCC 05-124.

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The Regulatory Studies Program (RSP) of the Mercatus Center at George Mason University is dedicated to advancing knowledge of the impact of regulation on society. As part of its mission, RSP conducts careful and independent analyses employing contemporary economic scholarship to assess rulemaking proposals from the perspective of the public interest. Thus, this comment on the Federal Communications Commission's (FCC's) Notice of Proposed Rulemaking and Further Notice of Proposed Rulemaking (NPRM) does not represent the views of any particular affected party or special interest group, but is designed to evaluate the effect of the commission's proposals on overall consumer welfare.

### **I. Introduction**

The Federal Communications Commission has solicited comments on performance measures for universal service programs as part of an NPRM in six dockets that address various aspects of universal service programs. The four universal service programs are the schools and libraries program, which provides discounted Internet connections to schools and libraries; the high-cost program, which subsidizes phone companies operating in high-cost areas; the low-income programs, which subsidize telephone connections and monthly phone service for low-income households; and the rural health care program, which subsidizes communications services for rural health care providers.

The Mercatus Center at George Mason University has extensive experience developing and critiquing government agencies' performance measures as a result of our work on government accountability. In 2005, we published our sixth annual *Performance Report*

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<sup>1</sup> Prepared by Maurice McTigue, distinguished visiting scholar, and Jerry Ellig, senior research fellow, Mercatus Center. As New Zealand's Minister of State Owned Enterprises from 1991 to 1994, the Honorable Maurice McTigue oversaw the contractual universal service obligations in the sale and purchase agreement that privatized New Zealand Telecom. This comment is one in a series of Public Interest Comments from Mercatus Center's Regulatory Studies Program and does not represent an official position of George Mason University.

*Scorecard*, which assesses the quality of annual performance and accountability reports produced by the 24 Cabinet and Chief Financial Officers' Act agencies that account for the vast majority of all federal spending.<sup>2</sup> We also published our first study analyzing the Office of Management and Budget's Program Assessment Rating Tool (PART) and assessing the effects of PART scores on appropriations.<sup>3</sup> Finally, we released a detailed study that summarizes existing information on the costs and outcomes associated with federal telecommunications regulation, including universal service programs.<sup>4</sup>

Performance measures are one of the most critical issues addressed in this proceeding. They are arguably even more important than provisions to prevent waste, fraud, and abuse. Drawing upon our extensive background in both government performance management and telecommunications regulation, we offer the following comments in response to the FCC's request:

- (1) Outcome measures should reflect actual benefits that programs are intended to produce for the public and show progress toward the intended outcomes.
- (2) Outcome measures should identify how much public benefit was actually caused by the universal service programs, not just report on trends.
- (3) Efficiency measures should identify the cost per unit of successful outcome, not just the cost per unit of output.
- (4) The relevant measure of costs should include the full economic effects of the universal service funding mechanism, not just the universal service program's expenditures.
- (5) In developing outcome and efficiency measures, the FCC can draw upon extensive independent research on the consequences and effectiveness of universal service programs.

## **II. Performance Measures Are Critical**

Paragraph 24 of the NPRM succinctly explains why performance measures are important:

We recognize that effective program management requires the implementation of meaningful performance measures. Clearly articulated goals and reliable performance data allow the Commission and other

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<sup>2</sup> Maurice McTigue, Henry Wray, and Jerry Ellig, *6<sup>th</sup> Annual Performance Report Scorecard: Which Federal Agencies Best Inform the Public?*, (April 2005) available at <http://www.mercatus.org/governmentaccountability/category.php/45.html>.

<sup>3</sup> Eileen Norcross, *An Analysis of the Office of Management and Budget's Program Assessment Rating Tool* (July 20, 2005), available at <http://www.mercatus.org/governmentaccountability/article.php/1280.html>.

<sup>4</sup> Jerry Ellig, *Costs and Consequences of Federal Telecommunications and Broadband Regulations* (2005), available at <http://www.mercatus.org/regulatorystudies/article.php/1074.html>.

stakeholders to assess the effectiveness of the USF [Universal Service Fund] programs and to determine whether changes are needed.<sup>5</sup>

Similar language appears in a Government Accountability Office Report recommending that the FCC develop performance measures for the schools and libraries program.<sup>6</sup>

About 6 percent of the NPRM (pp. 12-14) discusses performance measures. In contrast, 49 percent of the pages (pp. 6-11 and 14-29) deal with the administrative structure and process of universal service programs, and 29 percent (pp. 29-41) deal with oversight and audit issues.<sup>7</sup> Nevertheless, performance measures are arguably more important than efficient administrative processes or provisions to control waste, fraud, and abuse.

*Good performance measures identify whether the program actually produces the public benefits intended by policymakers.* In concert with the program's goals, the measures determine the ends toward which the administrative processes work. Efficient and well-designed processes will produce little public benefit if goals are unclear and measures are inaccurate.

The NPRM seeks comment on performance measures for evaluating the administration of universal service programs, such as application processing times, percentage of applications rejected due to errors, accuracy of bills, or error rates for disbursements.<sup>8</sup> Measures that focus on the efficiency of administrative processes are crucial tools for internal management and performance improvement, but convey little information to Congress and the public about the effectiveness of the programs. For this reason, it would be a mistake to focus most of the measurement effort on management processes, even though they are often easier to measure than outcomes.

Truly outcome-oriented goals and measures—including efficiency measures that focus on outcomes rather than outputs—implicitly account for the efficiency of administration. If administrative processes are inefficient, then outcome-oriented efficiency measures should reveal that the program produces outcomes at a relatively high cost.

The FCC should avoid the temptation to equate “accountability” with prevention of waste, fraud, and abuse. The presence of significant waste, fraud, and abuse can of course indicate lax accountability. However, waste, fraud, and abuse are just the tip of the iceberg as far as accountability is concerned.

Internal controls intended to prevent waste, fraud, and abuse only determine whether program funds are spent lawfully. They can prevent unlawful expenditures, but they cannot prevent lawful expenditures that fail to accomplish the program's goals. The fact

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<sup>5</sup> NPRM: para. 24.

<sup>6</sup> GAO Feb 2005: 20.

<sup>7</sup> The remainder is introductory material, background, and procedural material. Calculations exclude the Initial Regulatory Flexibility Analysis Appendix.

<sup>8</sup> NPRM: para. 31.

that money was spent “for the intended purpose” does not guarantee that the expenditure actually accomplished the intended purpose.

One might gain some insight into the relative importance of performance measures by comparing total expenditures on universal service programs with the amount of waste, fraud, and abuse identified by investigators. Unfortunately, it is not clear how much waste, fraud, and abuse exists.<sup>9</sup> The schools and libraries program has drawn the most attention in this regard. Audits have uncovered millions of dollars worth of improper payments. As of October 2004, recovery actions had been brought for a total of \$36 million since the inception of the program.<sup>10</sup> Since its inception, the program has spent \$13 billion<sup>11</sup>—more than 360 times the amount sought in waste, fraud, and abuse recovery actions. Even if only one percent of the expenditures are ineffective due to the lack of performance measures, that’s \$130 million over the life of the schools and libraries program to date—almost four times the amount of waste, fraud, and abuse recovery sought. This suggests that the amount of money spent lawfully but ineffectively, due to the absence of good performance measures, likely dwarfs the amount of waste, fraud, and abuse.

Performance measures help determine whether *all* of a program’s funds effectively produce public benefits. Though harder to measure than management processes, and less glamorous than waste, fraud, and abuse, performance measures are of paramount importance.

### **III. Performance Measures Should Reflect Outcomes**

The FCC requests comment on several types of performance measures identified by the Office of Management and Budget: outcome measures, output measures, and efficiency measures.<sup>12</sup> Outcomes are the most difficult to measure. Outputs are easier to measure, but much less useful indicators of the program’s success in producing benefits for the public. Efficiency measures are more useful when they focus on the efficiency with which the program produces outcomes, and less useful when they measure the efficiency with which the program produces outputs.

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<sup>9</sup> Apparently no one really knows how much waste, fraud, and abuse are in the schools and libraries program, and the Government Accountability Office concluded that audits conducted to date have been insufficient to estimate an amount. See GAO (2005): 34.

<sup>10</sup> GAO (2005): 36.

<sup>11</sup> GAO (2005): 5.

<sup>12</sup> NPRM, para. 25.

## **A. Outcomes are public benefits**

*The outcomes of a program are the intended public benefits produced, or harms to the public avoided, as a result of the program.* The process of devising outcome measures should thus take as its starting point the program's goals, expressed in terms of public benefit.

Statutory language may or may not identify the desired outcomes. The Government Performance and Results Act makes the FCC responsible for establishing strategic goals, annual goals, and measures.<sup>13</sup> Thus, it is incumbent upon the FCC to identify outcomes and craft appropriate outcome measures, rather than simply relying on statutory language.

The outcomes associated with universal service programs should be defined as the intended benefits to the public that actually occur as a result of the programs. The ultimate goal of the schools and libraries program, for example, is improved educational outcomes. Even if the program succeeds in connecting every classroom and library in the nation to high-speed Internet service, the program will not have created public benefits unless the Internet access actually improved educational outcomes. The FCC may have little control over whether or how schools utilize Internet access, but it can be held responsible for achieving the intermediate or "enabling" outcome: getting schools hooked up.

It is of course possible that Internet access could fail to improve educational quality due to some factor beyond the FCC's control. However, such a result might also occur due to some problem in the program that the FCC can remedy. But if no one knows whether the program is improving the quality of education, then opportunities to make the program more effective would likely be missed. For this reason, an effective outcome measure would include educational quality as well as improvements in Internet access.

Table 1 suggests possible outcome definitions for each universal service program. In some cases, the outcomes track language in the Telecommunications Act of 1996; in other cases, the outcomes are implicit in the activities Congress directed the FCC to undertake. We offer these definitions primarily to emphasize what kinds of things genuinely qualify as outcomes; other reasonable outcomes might be derived from the statute.

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<sup>13</sup> 47 U.S.C. Sec. 254(h)(2)(A).

**Table 1: Sample Outcome Definitions**

Program	Intended Outcome
Schools and Libraries	Improved educational outcomes attributable to increased Internet access in schools and libraries
High Cost	A reasonably priced option for access exists in rural and high cost areas
Low Income	An affordable option for access is available to low-income households
Rural Health	Improved health outcomes Reduced cost of maintaining a healthy population

### **B. Performance measurement should identify causation**

Meaningful outcome measures identify the extent to which the program has actually caused improvements in outcomes. It is not enough to identify positive trends. Either the outcome measure or some accompanying analysis should identify whether the program actually caused any change in the outcome, and if so how much. This is precisely the point that the Government Accountability Office made in its most recent assessment of the schools and libraries program:

For fiscal years 2000 through 2002, FCC's goals focused on achieving certain percentage levels of Internet access for schools, public school instructional classrooms, and libraries. However, the data that FCC used to report on its progress was limited to public schools (rather than including private schools and libraries) and did not isolate the impact of E-rate funding from other sources of funding, such as state and local government...Consequently, a fundamental performance question that remains unanswered is how much of the increase in public schools' access to the internet can be attributed to the E-rate program.<sup>14</sup>

To assess the effect of the schools and libraries program on outcomes, one would additionally need to establish whether any increase in Internet access caused by the program has actually improved educational outcomes. As the Government Accountability Office noted, "A basic policy issue associated with the E-rate [schools and libraries] program involves assessing the extent to which the billions of dollars of support for

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<sup>14</sup> U.S. Government Accountability Office, *Telecommunications: Greater Involvement Needed by the FCC in the Management and Oversight of the E-Rate Program* (February 2005): 5.

telecommunications services are providing the sought-after return on investment: improvement in the quality of education.”<sup>15</sup> Therefore, accurate outcome measurement for the schools and libraries program requires that the FCC verify and quantify two causal links: the effect of the schools and libraries program on Internet access, and the effect of Internet access on educational outcomes.

Similar reasoning applies to measures for other universal service programs. Whatever communications services the FCC chooses to include in the high cost and low-income programs, performance measures should identify whether the universal service programs have actually caused an improvement in outcomes.

Table 2 suggests some outcome measures for each universal service program that explicitly account for causation. For the high cost and low income programs, we suggest two possible measures of the effect of universal service programs: an availability measure and a price measure.

The availability measure documents the extent to which a service is physically there for people to subscribe if they choose. The FCC already employs availability measures in other contexts. For example, the annual report on broadband deployment assesses whether high-speed Internet service is offered in various zip codes.

One way researchers often measure the effects of universal service programs is to identify how the programs affect the “penetration rate,” or percent of the target population that purchases the service. The penetration rate can sometimes be a reasonable proxy for availability, since a low penetration rate may indicate that the service is simply not available to a segment of the target population. However, the penetration rate may not be an accurate measure if some households and businesses place negligible value on the service offered. A seaside community with many vacation homes, for example, might show a low penetration rate for wireline phone service because many homeowners simply bring their wireless phones with them when vacationing. Some families might regard television as a more useful source of information than a high-speed Internet connection. As a result of such consumer decisions, the penetration rate for the service might be low even though it is available. Alternatively, some low-income families might choose to purchase high-speed Internet service even though the price makes it a substantial financial sacrifice; in that case, the penetration rate might be high even though many would question whether the service is really “affordable.” For these reasons, the FCC’s performance measures should focus on availability and price, not just subscription.

That’s not to say that penetration rates might not provide useful information for program design and management. Since a low penetration rate might indicate problems with availability or affordability, it could prompt a more careful look at the program’s structure. And if the program causes an increase in subscribership at a relatively low cost, that suggests the program is accomplishing its goals in a cost-effective manner.

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<sup>15</sup> GAO (2005): 26.

The price outcome measures described in the table may seem complicated, but the underlying reasoning is relatively simple. To ascertain whether services are available in particular areas or to particular types of households at “comparable” prices, one must adjust for differences in prices and incomes. Dividing prices by income measures the relative burden, or percent of the household budget, spent on communications services. Comparing these percentages for rural vs. urban households, or low-income vs. middle-income households, tells us whether the cost of these services represents a “comparable” burden for different types of households.

Measuring the relative ratios of price to income does not necessarily imply that the goal of the high cost programs is to ensure that rural households spend the same percentage of their income on communications services as urban households. The desired ratio of rural prices as a percentage of rural income to urban prices as a percentage of urban income may be higher or lower than one. A similar caveat applies to the measures for the low-income programs. Regardless of what ratios the FCC believes are desirable, measures like the ones in the table would tell regulators, Congress, and the general public what effect the high cost and low-income programs have on the outcomes.

To have valid measures of both availability and affordability, the FCC would need to verify one type of causal relationship: the amount of change in the measure of interest caused by the universal service programs.

The rural health program, like the schools and library program, requires verification of two causal relationships. First, ascertain the extent to which the program actually increased rural health facilities’ use of various communications services, compared to what would have occurred in the absence of the program. Second, determine whether, or by how much, this increased use of communications services has improved health outcomes or reduced health care costs.



**Table 2: Outcome Measures Should Account for Causation**

Program	Intended Outcome	Outcome measures
Schools and Libraries	Improved educational outcomes attributable to increased Internet access in schools and libraries	Improvement in test scores (or other educational outcome measure) proven to result from the increase in Internet access caused by the program
High Cost	A reasonably priced option for access exists in rural and high cost areas	Change in availability of service to households and businesses that was caused by the program Change in ratio of rural price as a percent of rural income to urban price as a percent of urban income that was caused by the program
Low Income	An affordable option for access is available to low-income households	Change in availability of service to low-income households that was caused by the program Change in ratio of price as a percent of income for low-income households versus price as a percent of income for middle-income households that was caused by the program
Rural Health	Improved health outcomes  Reduced cost of maintaining a healthy population	Improvement in health outcomes attributable to increased use of communications services caused by the program Reduction in health care costs attributable to increased use of communications services caused by the program

**C. The most useful efficiency measures are outcome-oriented**

Efficiency measures are most useful when they identify how much it costs to produce a unit of successful outcome. These should not be difficult to calculate using good outcome measures and cost data. Table 3 presents these measures as quantity of outcome per million dollars spent. Such figures can assist regulators, Congress, and the general public in determining whether the current allocation across programs is desirable, or if some other allocation would produce a more desirable mix of public benefits. The “opportunity costs” of the current allocation, in terms of public benefits forgone, are more readily apparent when this kind of information is available. Turning the outcome/spending ratio on its head creates another useful efficiency measure that in some cases may be more intuitive: the amount of money spent to produce one unit of successful outcome.

**Table 3: Outcome-Oriented Efficiency Measures**

Program	Outcome measures	Efficiency Measures
Schools and Libraries	Improvement in test scores (or other educational outcome measure) resulting from increase in Internet access caused by the program	Improvement in educational outcomes per million dollars spent
High Cost	<p>Change in percentage of households or businesses using a service that was caused by the program</p> <p>Change in availability of service to households and businesses that was caused by the program</p> <p>Change in ratio of rural price as a percent of rural income to urban price as a percent of urban income that was caused by the program</p>	<p>Change in penetration rate or number of subscribers per million dollars spent</p> <p>Change in availability per million dollars spent</p> <p>Change in price/income ratios per million dollars spent</p>
Low Income	<p>Change in the percent of low-income households using a service that was caused by the program</p> <p>Change in availability of service to low-income households that was caused by the program</p> <p>Change in ratio of price as a percent of income for low-income households versus price as a percent of income for middle-income households that was caused by the program</p>	<p>Change in penetration rate or number of subscribers per million dollars spent</p> <p>Change in availability per million dollars spent</p> <p>Change in price/income ratios per million dollars spent</p>
Rural Health	<p>Improvement in health outcomes attributable to increased use of communications services caused by the program</p> <p>Reduction in health care costs attributable to increased use of communications services caused by the program</p>	<p>Amount of improved health outcome per million dollars spent</p> <p>Reduction in health care costs per million dollars spent</p>

#### **D. Efficiency measures should incorporate all economic costs**

Efficiency measures are most accurate when they include the total social cost of the program, not just the direct dollar expenditures. This is an especially important consideration for universal service programs, because economic research finds that the funding mechanism creates a substantial divergence between expenditures and overall social costs.

Federal universal service funds come from percentage assessments against telecommunications carriers' interstate and international revenues. Because firms' revenues often vary with the amount of service customers choose to buy, universal service contributions act like a usage-based tax. When applied to price-sensitive services such as long-distance and wireless, this tax leads to substantial reductions in usage and output. Consumers are worse off because they use less of the service, and telecommunications firms are worse off because they sell less of the service.<sup>16</sup> (Economists call this reduction in consumer and producer welfare the "excess burden" of the tax.)

Universal service commitments totaled approximately \$5.4 billion in 2004. The funding mechanism—mandatory contributions assessed as a percentage of telecommunications companies' interstate and international revenues—generates additional inefficiencies by increasing the prices of services whose demand is very price-sensitive, such as long-distance and wireless. The economic inefficiency, or "deadweight loss," associated with universal service assessments on long-distance service is approximately \$1.16 billion annually, and the deadweight loss associated with universal service assessments on wireless is approximately \$873 million annually.<sup>17</sup> Adding these inefficiencies to the \$5.4 billion expenditure increases the total annual cost of universal service programs to at least \$7.5 billion.

In other rulemakings, the FCC has noted that it may revise the funding mechanism for universal service programs.<sup>18</sup> Changing the funding mechanism could substantially increase or decrease the excess burden. Thus, it could substantially change the economic cost associated with universal service programs. An efficiency measure that includes the excess burden as part of the cost would reflect improvements in efficiency that could occur if the FCC changes the funding mechanism in ways that reduce the excess burden. On the other hand, if efficiency measures fail to include the excess burden, then the FCC would receive no credit for reforms to the funding mechanism that reduce the excess burden.

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<sup>16</sup> Jerry Hausman and Howard Shelanski, "Economic Welfare and Telecommunications Regulation: The E-Rate Policy for Universal-Service Subsidies," *Yale Journal on Regulation* 16 (Winter 1999): 36-37; Jerry Hausman, "Taxation Through Telecommunications Regulation," *Tax Policy and the Economy* 12 (1998): 31.

<sup>17</sup> See Ellig, *Costs and Consequences* (2005):iii.

<sup>18</sup> E.g., *Universal Service Contribution Methodology NPRM*, 17 FCC Rcd 24952, 24983-97, paras. 66-100.

## IV. Research on Outcomes and Cost-Effectiveness of Universal Service Programs

In developing effective performance measures, the FCC can draw on a substantial body of independent research that already examines the effects of some of the universal service programs and explores causal relationships. A recent Mercatus Center study examined relevant research on the outcomes of the schools and libraries, high cost, and low income programs.<sup>19</sup> We summarize our findings briefly here.

### A. Schools and libraries program

It is not clear whether this program has actually induced more schools and libraries to obtain Internet access. The National Center for Education Statistics reports that Internet access in public schools has increased steadily since 1994, to the point that 99 percent of schools now have Internet access. Several of the center's statistical releases speculate that the schools and libraries program may have helped increase Internet access, but they provide no analysis demonstrating that the program caused Internet access to be any higher than it would have been in the absence of the program.<sup>20</sup>

The most sophisticated analysis of the program has been conducted by the Urban Institute under contract to the U.S. Department of Education. This study finds that Internet connectivity for both high-poverty and low-poverty schools increased after implementation of the schools and libraries program, but connectivity for both was also increasing prior to the program. Funding is effectively targeted to high-poverty and rural schools. Schools receiving subsidies report increases in deployment of Internet technology. The study contains no data or analysis demonstrating that Internet connectivity is higher than it would be in the absence of the program; indeed, many of the statistical tests in the study find no effect.<sup>21</sup>

Similarly, there are no studies demonstrating whether any increase in Internet subscription or usage generated by the program has actually improved educational outcomes. The Urban Institute study notes, "...the data from this study do not allow comment on the benefits of expanding access to the Internet and other digital technology..."<sup>22</sup>

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<sup>19</sup> Ellig (2005).

<sup>20</sup> Anne Cattagni and Elizabeth Farris Westat, "Internet Access in U.S. Public Schools and Classrooms: 1994-2000," *Statistics in Brief*, National Center for Education Statistics (May 2001); Catrina Williams, "Internet Access in U.S. Public Schools and Classrooms: 1994-99," *Stats in Brief*, National Center for Education Statistics (Feb. 2000).

<sup>21</sup> Michael J. Puma et. al., "The Integrated Studies of Educational Technology: A Formative Evaluation of the E-Rate Program," draft study, Urban Institute (Oct. 2002), available at [http://www.urban.org/UploadedPDF/410579\\_ERateFinalReport.pdf](http://www.urban.org/UploadedPDF/410579_ERateFinalReport.pdf).

<sup>22</sup> Puma et. al. (2002): 34.

## B. High cost programs

Much of the research on the effects of high cost programs has focused on subscribership. Subscribership can be a misleading outcome measure, but the results of these studies provide useful information about the cost-effectiveness of the high cost programs.

The high cost support programs appear to be a very costly way of increasing subscribership. The most recent study on this topic estimates that the cost of adding one subscriber through loop support was at least \$11,000 in 2000, up from \$3350 in 1990. The cost of adding one subscriber through local switching support was \$5155, up from approximately \$2000 in 1990.<sup>23</sup> This cost is substantially higher than the \$666 estimated by another study for 1985-93.<sup>24</sup>

The high-cost program redistributes wealth from urban and suburban households to rural telephone companies. Superficially, the program appears to accomplish substantial redistribution, with expenditures of \$3.3 billion in 2003. Two factors, however, suggest that high-cost support may not promote affordability as well as it could.

First, the payments go to telephone companies, not households, and there is no guarantee that the \$3.3 billion subsidy actually creates \$3.3 billion worth of value for rural households. Many of the high-cost telephone companies are rural companies that still operate under rate-of-return regulation, which is notorious for creating incentives for inefficiency. Rate-of-return regulation often distorts the regulated firm's choice of inputs, so the regulated firm fails to produce at minimum cost.<sup>25</sup> Rate-of-return regulation also reduces entrepreneurial incentives to squeeze out unnecessary costs and undertake valuable but risky innovation.<sup>26</sup> The resulting rates might be considered "just and reasonable," because they reflect costs, but the costs themselves are inflated. In such an environment, some subsidies merely cover artificially inflated costs, rather than lowering prices for consumers. The actual amount of waste is unknown, but one consultant's report

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<sup>23</sup> Daniel J. Ryan, "Universal Telephone Service and Rural America," unpublished manuscript (April 30, 2004): 18-19.

<sup>24</sup> R.C. Eriksson, D.L. Kaserman, and J.W. Mayo, "Targeted and Untargeted Subsidy Schemes: Evidence from Post-Divestiture Efforts to Promote Universal Service," *Journal of Law & Economics* 41 (1998): 477-502. This study uses data only for the Bell telephone companies, which receive a small portion of total high-cost support and may not be typical.

<sup>25</sup> Leon Courville, "Regulation and Efficiency in the Electric Utility Industry," *Bell Journal of Economics* 5 (Spring): 53-74; Paul M. Hayashi and John M. Trapani, "Rate of Return Regulation and the Regulated Firm's Choice of Capital-Labor Ratio: Further Empirical Evidence on the Averch-Johnson Effect," *Southern Economic Journal* 42 (January 1976): 384-97; H. Craig Petersen, "An Empirical Test of Regulatory Effects," *Bell Journal of Economics* 6 (1975): 111-26; Robert M. Spann, "Rate of Return Regulation and Efficiency in Production: An Empirical Test of the Averch-Johnson Thesis," *Bell Journal of Economics* 5 (Spring): 8-52; E. Ray Canterbury, Ben Johnson, and Don Reading, "Cost Savings from Nuclear Regulatory Reform: An Econometric Model," *Southern Economic Journal* (Jan. 1996): 554-66.

<sup>26</sup> Israel Kirzner, "The Perils of Regulation: A Market Process Approach," in *Discovery and the Capitalist Process* (University of Chicago Press, 1985): 119-49.

concluded that many of the incumbent phone companies subject to rate-of-return regulation have substantial inefficiencies.<sup>27</sup>

Systemic waste can occur even if rate of return regulation is ineffective, or if a carrier is subject to some other form of price regulation. When wealth transfers are available, organized interests will expend resources to obtain them through lobbying, litigation, and other activities intended to influence regulators' and legislators' decisions. From a society-wide perspective, money spent purely to capture wealth transfers is often considered waste. In some circumstances, the total amount of money wasted may even exceed the size of the wealth transfer.<sup>28</sup> It is unclear how much of the billions of dollars' worth of high-cost subsidies are expended to influence governmental processes rather than reduce prices for the consumers who are supposed to benefit from the subsidies. Research on other telecommunications regulations, however, suggests that the waste could be substantial.<sup>29</sup>

Second, any resulting reductions in rural telephone rates are funded in large part by universal service assessments on long-distance and wireless. To the extent that rural subscribers use a substantial amount of long-distance service (because many of the people they call are outside the local calling area) or also subscribe to wireless, the high-cost program merely rearranges figures on their phone bills rather than providing any genuine savings. But because long-distance and wireless use are highly sensitive to price, universal service assessments on those services reduce economic welfare substantially.

### C. Low income programs

The principal scholarly research relevant to low income programs consists of a series of studies that measure the programs' effect on telephone subscribership.

Some studies find that the low income programs have a small effect on subscribership, and some find no effect. A 1997 study by Christopher Garbacz and Herbert G. Thompson, using data from the 1990 Decennial Census, found that expenditures on

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<sup>27</sup> The study, conducted for Western Wireless, concluded that rural incumbent local exchange carriers' corporate operations expenses total \$545 million (33 percent) higher than they would be if all of these companies were as efficient as the top-performing 25 percent of companies in each size-based group. See *Lost in Translation: How Rate of Return Regulation Transformed the Universal Service Fund for Consumers into Corporate Welfare for the RLECs* (Boston, MA: Economics and Technology Inc., February 2004): 37-40.

<sup>28</sup> Michael Crew and Charles Rowley, "Toward a Public Choice Theory of Monopoly Regulation," *Public Choice* 57 (1988): 49-67; Gordon Tullock, "The Welfare Costs of Tariffs, Monopolies, and Theft," reprinted in James Buchanan, Robert Tollison, and Gordon Tullock, *Toward a Theory of the Rent-Seeking Society* (College Station: Texas A&M University Press, 1980).

<sup>29</sup> For example, a Mercatus Center working paper finds that unbundled network element platform regulation transferred approximately \$3.1 billion from incumbent phone companies to competitive local exchange carriers in 2003. Data from several large states where competitors made heavy use of the platform suggest that the competitors' customers received only a fraction of the wealth transfer. See Jerry Ellig and James N. Taylor, "The Opportunity Costs of Unbundled Network Element Regulation," Mercatus Center Working Paper (November 2004), available at <http://www.mercatus.org/pdf/materials/980.pdf>.

Lifeline and Linkup programs increase telephone penetration, but by very small amounts. A 10 percent increase in expenditures would lead to less than a one tenth of one percent increase in the percentage of households with telephones.<sup>30</sup> Studies by the same authors, using 2000 census data, estimate that Lifeline and Linkup increase subscription at a cost of \$1581-\$2200 per additional subscription.<sup>31</sup> The authors conclude, “This is a direct result of the fact that a high proportion of program monies go to households that are already on the network and do not plan to leave. How to target those not on the network, while denying payments to those already on the network who are in no danger of leaving, is a conundrum.”<sup>32</sup> More recently, Garbacz and Thompson used the same method to assess the effects of Lifeline and Linkup separately. They found that Linkup had no effect on telephone penetration, and Lifeline was responsible for most of the effect they previously attributed to both programs jointly.<sup>33</sup>

A 2004 study confirms these estimates and inferences, finding that Lifeline and Linkup programs increased total subscribership by about 0.155 percent in 2000.<sup>34</sup> Overall, the programs cost about \$97 per household that receives subsidies, but increased subscribership at a cost of approximately \$1899 per additional subscriber.<sup>35</sup>

Finally, some studies find that the low-income programs have no effect on subscribership at all. One of the most extensive recent studies found that monthly charges have no influence on telephone penetration rates, and Linkup programs sometimes increase and sometimes decrease penetration, depending on the data set used to estimate the relationship.<sup>36</sup>

Surveys of phoneless households help explain these results. The most common reasons that phoneless households give for not subscribing to telephone service is concern about uncontrollable usage-based charges, not the cost of basic local service. A pathbreaking 1994 study of low-income households in New Jersey found that the cost of usage-related charges and optional services—such as long-distance, collect calls, calling-card calls, and voice mail—were the most common reasons that households lacked phone service. Heads of households noted that other family members or friends living with them had run up large usage-related bills in the past, often without their knowledge or approval. The

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<sup>30</sup> Christopher Garbacz and Herbert G. Thompson, Jr., “Assessing the Impact of FCC Lifeline and Link-Up Programs on Telephone Penetration,” *Journal of Regulatory Economics* 11 (1997): 77.

<sup>31</sup> Christopher Garbacz and Herbert G. Thompson, “Estimating Demand with State Decennial Census Data from 1970-1990,” *Journal of Regulatory Economics* 21:3 (2002): 320, 328; Christopher Garbacz and Herbert G. Thompson, “Estimating Telephone Demand with State Decennial Census Data from 1970-1990: Update with 2000 Data,” *Journal of Regulatory Economics* 24:3 (2003): 377.

<sup>32</sup> Garbacz and Thompson (2002): 328.

<sup>33</sup> Christopher Garbacz & Herbert G. Thompson, Jr., “Universal Telecommunication Services: A World Perspective,” *Information Economics and Policy* (2005), fn. 14.

<sup>34</sup> Ryan (2004): 18.

<sup>35</sup> Ryan (2004): 18-19.

<sup>36</sup> Crandall and Waverman (2000): 94-104.

authors concluded, “Income, employment, and other measures of wealth or poverty are strongly related to low penetration not because the price of basic local phone service is too high, but because low-income users who run up large usage-related bills are unable to cover them.”<sup>37</sup>

A 1995 survey of Texas households without telephones found that about half of them said the cost of local service makes it difficult to afford a telephone, but about 80 percent said they could afford to pay \$16 per month, the actual average cost of local service in Texas at the time of the survey. The primary barriers to phone service were the fact that long-distance charges are variable and hence perceived as harder to control, the cost of reinstallation for people who previously had service disconnected due to nonpayment of bills, and difficulty in controlling who uses the phone.<sup>38</sup>

Overall, the low-income programs (particularly Lifeline) appear to be a very ineffective way of increasing subscribership among low-income households; they may have no effect at all. The principal reason appears to be that, for low-income households, factors other than the fixed monthly charge are bigger barriers to subscribership. This result is especially noteworthy when one realizes that all of the cost-per-additional-subscriber figures in the academic literature define “cost” as expenditures. They do not include the additional loss of consumer and social welfare that results from the assessments on long-distance and wireless service.

## V. Conclusion

In seeking comment on performance measures for universal service programs, the FCC has taken an important and welcome step. Even a small increase in program effectiveness or efficiency could generate benefits that far outweigh the waste, fraud, and abuse that have been identified in the programs. In other words, failure to develop good performance measures has likely cost the nation much more in forgone public benefits than waste, fraud, and abuse. Sound performance measures help ensure that program monies are spent not just lawfully, but effectively. For this reason, creation of effective performance measures should be the highest priority in this proceeding. The following recommendations would help ensure that the performance measures are as outcome-focused as possible:

- (1) Outcome measures should reflect actual benefits that programs are supposed to produce for the public and show progress toward the intended outcomes.
- (2) Outcome measures should identify how much public benefit was actually caused by the universal service programs, not just report on trends.

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<sup>37</sup> Milton L. Mueller and Jorge Reina Schement, “Universal Service from the Bottom Up: A Study of Telephone Penetration in Camden, New Jersey,” *The Information Society* 12 (1996): 287.

<sup>38</sup> John B. Horrigan and Lodis Rhodes, *The Evolution of Universal Service in Texas* (Sept. 1995), available at [www.apf.org/policy/lbjbrief.html](http://www.apf.org/policy/lbjbrief.html).



(3) Efficiency measures should identify the cost per unit of successful outcome, not just the cost per unit of output.

(4) The relevant measure of costs should include the full economic effects of the universal service funding mechanism, not just the universal service program's expenditures.

(5) In developing outcome and efficiency measures, the FCC can draw upon extensive independent research on the consequences and effectiveness of universal service programs.

A great deal of independent research suggests that universal service programs have had relatively small effects on outcomes. Those findings alone suggest that the nation has suffered greatly in the absence of effective performance measures.